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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/494,211	01/25/2000	Il-Ki Woo	003364.P035	3154

7590 12/21/2006

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EXAMINER	
DOVE, TRACY MAE	
ART UNIT	PAPER NUMBER
1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/494,211	WOO ET AL.	
	Examiner	Art Unit	
	Tracy Dove	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,4,6-10,14,19,21-26 and 28-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,4,6-10,14,19,21-26 and 28-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the communication filed on 11/29/06. Applicant's arguments have been considered, but are not persuasive. Claims 3, 4, 6-10, 14, 19, 21-26 and 28-35 are pending.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/29/06 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3, 4, 6-10, 14, 19, 21-26 and 28-35 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a copper alloy collector having a composition, Ni: 1.8%, Ti: 1.1%, Cu: balance, with a tensile strength of 560 N/mm^2, does not reasonably provide enablement for any other copper alloy composition having the claimed tensile strength. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. Values cannot be taken from a specific example and broadened to cover subject matter not disclosed in the specific example. Furthermore, Table 1 does not

disclose "*greater than* 560 N/mm^2". Example 1 in Table 1 only provides support for a copper alloy collector composition of Ni: 1.8%, Ti: 1.1%, Cu: balance having a tensile strength of 560 N/mm^2. The amendments to the claims improperly broaden Table 1 of the specification.

Claims 33-35 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a copper alloy collector having a composition of Example 2 or Example 3 with a tensile strength of 620 N/mm^2, does not reasonably provide enablement for any other copper alloy composition having the claimed tensile strength. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. Values cannot be taken from a specific example and broadened to cover subject matter not disclosed in the specific example. Furthermore, Table 1 does not disclose "*greater than* 620 N/mm^2". Examples 2 and 3 in Table 1 only provide support for recited copper alloy collector compositions having a tensile strength of 620 N/mm^2. The amendments to the claims improperly broaden Table 1 of the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 4, 6, 19, 21 and 32-34 are rejected under 35 U.S.C. 102(a)/103(a) as being anticipated by, and alternatively unpatentable over, Takagi et al., JP 11-339811.

Takagi teaches a copper alloy foil current collector for a secondary battery with high conductivity and high tensile strength. The current collector is made of a copper alloy having an alloy composition of 95 wt% copper and 0.01-5 wt% of at least one element selected from the group comprising iron (Fe), nickel (Ni), chromium (Cr), phosphorus (P), tin (Sn) and zinc (Zn). The thickness of the copper alloy foil current collector is 8-25 μm and the tensile strength is preferably 500 N/mm^2 or more. The copper alloy foil current collector is preferably used in a lithium ion secondary battery using a carbon base material such as carbon as a negative active material (abstract). Two or more of iron, nickel, chromium, phosphorus, tin or zinc may be added to the copper alloy. Examples of the copper alloys are Cu-Fe, Cu-Ni, Cu-Cr, Cu-Fe-P and Cu-Cr-Sn-Zn (0009). Example 2 in Table 1 teaches a current collector having a thickness of 10 μm comprising a copper alloy foil containing 0.3 wt% Cr, 0.25 wt% Sn and 0.2 wt% Zn. Example 1 teaches a copper alloy containing 0.1 wt% Fe and 0.03 wt% P. Example 3 teaches a copper alloy containing 0.1 wt% nickel. Takagi teaches a copper alloy foil current collector for a secondary battery with high conductivity and high tensile strength. The copper alloy foil can be cold rolled or formed by an electrolytic decomposition process (0010).

Thus the claims are anticipated.

*

Claims 3, 4, 6, 7, 19, 21, 22, 26 and 28-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi et al., JP 11-086871.

Takagi teaches a copper foil current collector for a secondary battery. The current collector contains 99.9 or more wt% copper and 0.02 wt% or less of at least one of P, Pb, Fe, Sn, Zn, Ni, Bi, Ag, Ti and/or Co. A negative electrode is obtained by applying a paste-like material including carbon or graphite to the current collector (abstract). The collector is 10-20 micrometers thick (0010). The secondary battery may be a lithium ion battery. Takagi teaches a copper alloy foil current collector for a secondary battery with high conductivity and high tensile strength. The copper alloy foil can be cold rolled or formed by an electrolytic decomposition process (0009).

Takagi does not explicitly teach a copper alloy comprising the recited weight percentages of each element contained in the copper alloy.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Takagi teaches a copper alloy foil may be used as the anode current collector. Takagi teaches that copper may be alloyed with materials such as P, Pb, Fe, Sn, Zn, Ni, Bi, Ag, Ti and/or Co. Thus, Takagi suggests a copper alloy foil wherein the copper alloy comprises at least two (or at least three) additional materials such as P, Pb, Fe, Sn, Zn, Ni, Bi, Ag, Ti and/or Co. Takagi does not disclose any specific copper alloy composition having two or more additional elements. However without any showing of critically, the claimed Cu-based alloy foil is considered obvious in view of Takagi. Note the claimed tensile strength would have been obvious because one of skill would have expected similar Cu-based alloy foils having similar thicknesses to have similar tensile strength. If the

claimed element and the prior art element appear to be the same or similar, the claimed properties of the claimed element are considered inherent in the prior art element.

Regarding the claimed weight percentages, the courts have ruled where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA 1250, 156 F.2d 239, 70 USPQ 412. The courts have held that a limitation merely with respect to proportions in a composition of matter or process will not support patentability unless such limitation is "critical". Minerals Separation, Ltd. v. Hyde, 242 U.S. 261 (1916). Furthermore, the courts have ruled that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Furthermore, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious (In re Fessman). Thus, the limitation "produced by a plating process" is considered obvious in view of the prior art.

Allowable Subject Matter

Claims 8-10, 14 and 23-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations (except for the newly added new matter) of the base claim and any intervening claims. The claimed invention requires a copper based alloy comprising at least nickel, titanium and magnesium.

Response to Arguments

Applicant's arguments filed 11/29/06 have been fully considered but they are not persuasive.

Takagi '811

Applicant asserts Takagi '811 does not teach or suggest "wherein the tensile strength of the negative current collector is greater than 560 N/mm2". However, this limitation is disclosed by the abstract of Takagi '811 that teaches the thickness of the copper alloy foil current collector is 8-25 μm and the tensile strength is preferably 500 N/mm^2 or more. Takagi teaches a copper alloy foil current collector for a secondary battery with high conductivity and high tensile strength. The copper alloy foil can be cold rolled or formed by an electrolytic decomposition process (0010).

Takagi '871

Applicant asserts Takagi '871 does not teach or suggest "wherein the tensile strength of the negative current collector is greater than 560 N/mm2". However, this limitation is considered inherent in the teachings of Takagi '871 (see above argument). Takagi teaches a copper alloy foil current collector for a secondary battery with high conductivity and high tensile strength. The copper alloy foil can be cold rolled or formed by an electrolytic decomposition process (0009).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 18, 2006

TRACY DOVE
PRIMARY EXAMINER